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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/915,514

07/27/2001

Philippe Peltie

034299-337

7058

7590

05/25/2004

Robert E. Krebs
Thelen Reid & Priest LLP
P.O. Box 640640
San Jose, CA 95164-0640

EXAMINER

LAVARIAS, ARNEL C

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 05/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,514

Applicant(s)

PELTIE ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/12/04, 3/11/04, 1/16/04.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-15 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments to Claim 1 in the submission dated 3/11/04 are acknowledged and accepted. In view of these amendments, the rejections of Claims 1-15 under 35 U.S.C. 112, 1st paragraph, in the Office Action dated 10/8/03 are respectfully withdrawn.

Response to Arguments

2. The Applicants argue that, with respect to newly amended Claim 1, Hoyt in view of Kopf-Sill et al. fails to teach or reasonably suggest a fluorescence image device, wherein the polarized light forms a beam substantially parallel to the plane. Although the Examiner respectfully disagrees (i.e. See specifically the light beams 6a, 6b, 6c, 6d in Figure 1 of Hoyt, these beams being substantially parallel to the plane formed by the sample wells 14a, 14b, 14c, 14d), after a further review, it has been determined that the Hoyt reference is not available as prior art to the instant application since the provisional application (i.e. 60/184844, a copy of which is provided herein) to which the Hoyt reference claims priority to does not provide adequate support for the apparatus shown in Figure 1 of the Hoyt reference. The rejections of Claims 1-15 in Sections 9-12 of the Office Action dated 10/8/03 are respectfully withdrawn.
3. Claims 1-15 are rejected as follows.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. (U.S. Patent No. 6358387), of record, in view of either Garner (U.S. Patent No. 6160618) or Briggs et al. (U.S. Patent No. 5560811).

With regard to Claims 1-2, 5, Kopf-Sill et al. discloses a fluorescence image device (See Figures 1 and 13) comprising first means for containing constituents to be analyzed, such as a sample holder (See for example 630 in Figure 13); second means for illuminating with polarized light the constituents to be analyzed (See for example 610 in Figure 13; col. 16, line 46-col. 17, line 28); and third means for reading out a fluorescence light emitted by the constituents under the action of the polarized light (See for example 620 in Figure 13); the first means having a structure of N parallel microchannels (See 622 in Figure 13) defining a plane (See top surface of 630 in Figure 13), N being an integer (in the instant case, N=4 in the example shown in Figure 13); the second means having at least one coupling device, such as a cylindrical lens, for guiding polarized light into the N parallel microchannels so as to obtain N fluorescent sections (See for example 614 in Figure 13; col. 16, line 46-col. 17, line 28). Kopf-Sill et al. additionally discloses the N parallel microchannels being etched in a glass chip (See 20 in Figure 1; col. 6, line 38-col. 7, line 11); the second means comprising a first and a second

laser or microlaser (See 610 in Figure 13; 640₁, 640₂, 640₃, 640₄ in Figure 14) for illuminating the whole of the microchannel structure; and the one or more laser or microlaser emitting at a first wavelength substantially between 488 nm and 514 nm, and between 530 nm and 550 nm (See col. 18, lines 19-36). Kopf-Sill et al. lacks the polarized light forming the beam being substantially parallel to the plane. However, it is well known in the art to route or direct incident light in any particular direction that allows the incident light to impinge the sample in optical spectroscopic apparatus. For example, both Briggs et al. and Garner teach analytical apparatus for directing an incident light beam onto a sample plate. In particular, Briggs et al. teaches a capillary electrophoresis apparatus (See Figure 11), wherein an incident light beam from a source (See 75 in Figure 11) is directed parallel (See incident beam near element 34 in Figure 11) to the plane formed by the microchannels (See 101 in Figure 11) in the sample plate (See 100 in Figure 11). Similarly, Garner teaches a hyperspectral slide reading device (See Figure 2) wherein an incident light beam from a series of sources (See 12a, 12b, 12c in Figure 2) is directed parallel (See 18 in Figure 2) to the plane (See top surface of 20 in Figure 2) formed by the surface of the sample slide (See 20 in Figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the polarized light forming the beam be substantially parallel to the plane, as taught by either Briggs et al. or Garner, in the fluorescence image device of Kopf-Sill et al., for the purpose of providing flexible routing and adjustment/alignment of the incident light beam.

6. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. in view of either Garner or Briggs et al. as applied to Claim 1 above, and further in view of Nordman et al. (U.S. Patent No. 6231739), of record.

Kopf-Sill et al. in view of either Garner or Briggs et al. discloses the invention as set forth above in Claim 1, except for the microchannels being flexible capillaries. However, Nordman et al. teaches a multichannel capillary electrophoresis device for use in fluorescence detection wherein the constituents flow through flexible capillaries (See for example Figures 1 or 2; col. 3, line 62-col. 4, line 57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate flexible capillaries, as taught by Nordman et al., in the fluorescence image device as disclosed by Kopf-Sill et al. in view of either Garner or Briggs et al. One would have been motivated to do this to provide high-pressure fluid flow for sample movement along the microfluidic substrate.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. in view of either Garner or Briggs et al. as applied to Claim 1 above, and further in view of Neuschäfer et al. (U.S. Patent No. 6078705).

Kopf-Sill et al. in view of either Garner or Briggs et al. discloses the invention as set forth above in Claim 1, except for the coupling device comprising a diffraction grating. However, Neuschäfer et al. teaches an apparatus for detection of light emission from a sample in a sample plate (See for example Figures 5A, 6), wherein a diffraction grating (See 3 in Figure 6) is utilized as a means for coupling the incident light from the source (See 13 in Figure 6) to the sample (See 1, 12 in Figure 6). Therefore, it would have been

obvious to one having ordinary skill in the art at the time the invention was made to have the coupling device comprise a diffraction grating, as taught by Neuschäfer et al., in the fluorescence image device as disclosed by Kopf-Sill et al. in view of either Garner or Briggs et al., to take advantage of well known, and relatively inexpensive, grating production techniques, as well as increase sensitivity and coupling-in efficiency.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. in view of either Garner or Briggs et al. and further in view of Nordman et al. as applied to Claims 1 and 3 above, and further in view of Neuschäfer et al.

Kopf-Sill et al. in view of either Garner or Briggs et al. and further in view of Nordman et al. discloses the invention as set forth above in Claims 1 and 3, except for the coupling device comprising a diffraction grating. However, Neuschäfer et al. teaches an apparatus for detection of light emission from a sample in a sample plate (See for example Figures 5A, 6), wherein a diffraction grating (See 3 in Figure 6) is utilized as a means for coupling the incident light from the source (See 13 in Figure 6) to the sample (See 1, 12 in Figure 6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the coupling device comprise a diffraction grating, as taught by Neuschäfer et al., in the fluorescence image device as disclosed by Kopf-Sill et al. in view of either Garner or Briggs et al. and further in view of Nordman et al., to take advantage of well known, and relatively inexpensive, grating production techniques, as well as increase sensitivity and coupling-in efficiency.

9. Claims 8, 10-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. in view of either Garner or Briggs et al. as applied to Claim 1 above, and further in view of Hoyt (U.S. Patent No. 6455861, or Hoyt '861).

Kopf-Sill et al. in view of either Garner or Briggs et al. discloses the invention as set forth above in Claim 1, except for the third means comprising a birefringent crystal, such as a calcite crystal, for separating the fluorescence light emitted according to two components polarized perpendicularly to each other. However, Hoyt '861 teaches an instrument for performing fluorescence polarization measurements (See for example Figure 4b, 10a, 10b, 11, 12), wherein means for reading out the fluorescence light (See for example 47a, 47b, 47c, 47d in Figure 4b) emitted by the sample (See 46a, 46b, 46c, 46b in Figure 4b) is via a calcite crystal (See 112 in Figure 9; 151 in Figure 10a, 10b; 171 in Figure 11; 191 in Figure 12) that separates the fluorescence light emitted according to two components polarized perpendicularly to each other. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the third means comprise a birefringent crystal, such as a calcite crystal, for separating the fluorescence light emitted according to two components polarized perpendicularly to each other, as taught by Hoyt '861, in the fluorescence image device as disclosed by Kopf-Sill et al. in view of either Garner or Briggs et al., for the purpose of reducing measurement time since both the s- and p-polarization fluorescence signals are measured simultaneously.

10. Claims 6-7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopf-Sill et al. in view of either Garner or Briggs et al. as applied to Claim 1 above, and further

in view of Modlin et al. (U.S. Patent Application Publication US2001/0007496 A1), of record, and Stabile et al. (U.S. Patent No. 6231739), of record.

Kopf-Sill et al. in view of either Garner or Briggs et al. discloses the invention as set forth above in Claim 1, except for the third means comprising a first polarizing filter and a second polarizing filter. However, Modlin et al. teaches an apparatus for performing fluorescence polarization measurements wherein the third means for reading out a fluorescence light (See for example 144 in Figure 8) comprises a first polarizing filter (See P filter of 132 in Figure 8) and a second filter (See S filter of 132 in Figure 8). Additionally, Stabile et al. teaches an apparatus for detecting polarized fluorescence light from a sample (See for example Figures 1B or 2), wherein the first and the second polarizing filters are located on a filter wheel (See for example 4B in Figure 2; col. 10, lines 14-34). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a first and a second polarizing filter in a filter wheel as part of the means for reading out the fluorescence light, as taught by Modlin et al. and Stabile et al., in the fluorescence image device as disclosed by Kopf-Sill et al. in view of either Garner or Briggs et al. One would have been motivated to do this to eliminate polarized background signals from the fluorescence signal, thus increasing the signal-to-noise ratio of the detection system, while allowing for automated selection of the polarizer.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

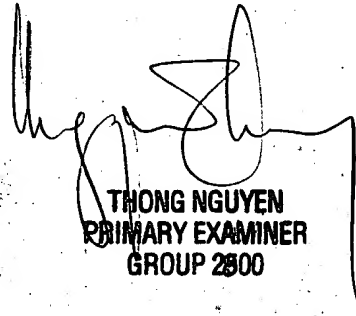
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias
5/17/04



THONG NGUYEN
PRIMARY EXAMINER
GROUP 2800